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CODE OF PRACTICE FOR HANDLING AND STORAGE OF MICROTRANSPARENCIES (MICROFILM AND MICROFICHE) (SILVER HALIDE)

(Second Revision)

UDC 778·14·072 : 77 025 : C06·76

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 3 *September* 1985

Indian Standard

CODE OF PRACTICE FOR HANDLING AND STORAGE OF MICROTRANSPARENCIES (MICROFILM AND MICROFICHE) (SILVER HALIDE)

(Second Revision)

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Indian Standard

CODE OF PRACTICE FOR HANDLING AND STORAGE OF MICROTRANSPARENCIES (MICROFILM AND MICROFICHE) (SILVER HALIDE)

(Second Revision)

0. FOREWORD

0.1 This Indian Standard (Second Revision) was adopted by the Indian Standards Institution on 11 January 1985, after the draft finalized by the Documentation Sectional Committee had been approved by the Executive Committee.

0.2 Products of micrographic technology like microfilm, microfiche and similar other microtransparencies are being widely used in a variety of institutions, such as archives, libraries, documentation centres, scientific laboratories and various government departments, industry and trade in India.

0.3 The image quality and the usable life of a microcopy are dependent on one or more factors, namely, reprographic process used, the stability of the base and emulsion, processing, care deployed in its handling and conditions of storage.

0.3.1 Care in handling and storage ensures safety from physical damage, such as scratches, abrasions, cracking of emulsion, buckling, tears, stains, deposits, finger-prints and growth of fungus, all of which affect the quality and legibilty of image. Environmental conditions of temperature and relative humidity, exposure to chemical vapours, fumes and gases, as well as the quality of containers used for storage have a bearing on the shelf-life of the film.

0.4 This code was originally published in 1965 and covered only the storage of microfilms. It was revised in 1972, to include microfiche and also to cover some of the important aspects, namely, care in handling to check physical damage and packing methods for transmitting the microcopies. The present revision, besides updating the standard to make it more comprehensive and useful, elaborates the ambient conditions of storage and the inspection requirement for microtransparencies.

0.5 In the preparation of this standard, considerable assistance has been derived from ISO 5466-1980 'Photography — Practice for the storage of processed safety photographic film', issued by International Organization for Standardization.

1. SCOPE

1.1 This code covers the manner of handling of microfilm and microfiche during exposure, processing, packing, despatch and use in order to ensure prevention of damage and also lays down the inspection requirements and conditions in which the film should be stored so as to prevent damage and prolong its useful life. The processing of film for ensuring the stability of image has been covered in IS : 3083-1985*.

1.2 This code covers only safety base silver halide films.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

2.1 Film — A thin transparent flexible base supporting the microimages.

2.2 Microtransparency — An optically reduced copy of a document on transparent film requiring magnification to be readable.

2.3 Microfilm — A transparent film in ribbon form containing one or more microimages.

2.3.1 *Microfilm Roll* — A roll of microfilm containing a series of microimages.

2.3.2 *Microfilm Strip* — A strip of microfilm containing one or more microimages and kept flat.

2.4 Unitized Microfilm — A strip or sheet of microfilm containing one or a few frames of microimages, unmounted, or mounted, such as in a window insert in an aperture card.

2.5 Microfiche — A transparent sheet of film containing multiple microimages in a grid pattern, that is, arranged in horizontal rows and vertical columns along with the heading.

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*Code of practice for the processing of microtransparencies (microfilms and microfiche) (silver halide) (*first revision*).

3. WIDTH AND LENGTH OF MICROFILM AND MICROFICHE

3.1 Standard widths for microfilms are 16, 35, 70 and 105 mm. These are stored as:

a) rolls approximately 30 m or less in length,
b) strips usually 23 cm in length,
c) 70 mm and 105 mm unitized frames,
d) 16 mm or 35 mm frames inserted into channels of cellulose acetate or polyester jacket cards or window inserts in aperture cards, and
e) 35 mm frames in an aperture of edge notched or field punched cards (similar to those used in electrical accounting machines).

3.2 Various sizes of microfiche in use are:

a) 105 x 148 mm (A 6 size),
b) 75 x 125 mm, and
c) 90 x 120 mm.

NOTE — 105 x 148 mm (A 6 size) is the preferred size for microfiche (*see* IS : 10200-1982*).

4. TYPE OF DAMAGE

4.1 Damages generally occurring to microtransparencies during handling and storage are scratches and abrasions, cracking and buckling, tears, stains, deposits, finger-prints, bacterial and fungoid growth.

4.2 Scratches, Abrasions and Tears

4.2.1 Scratches, abrasions and tears, mar or destroy the image. These are caused by abrasive surfaces, dust, sharp objects and by sharp folding.

4.2.1.1 Sharp pointed objects, such as finger nails, forceps and pins shall not be allowed to come in contact with the film.

4.2.1.2 Stationery hardware like paper clips, pins and staples shall not be used for direct fastening.

4.2.1.3 Equipment in which film is fed, such as cameras, readers, printers, projectors, processors, spools, rewinders, as well as containers shall be smooth, clean, free of dust and other abrasive material.

4.2.1.4 Bending or folding of the film to less than 2·5 cm diameter shall be avoided.

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*Specification for A 6 size microfiche.

4.2.1.5 The ends of the film strips or rolls shall be clipped round to avoid sharp free ends.

4.2.1.6 Films shall be handled in a dust-free atmosphere.

4.3 Cracking Buckling and Peeling of Emulsion

4.3.1 Exposure of film to sudden or wide variations in temperature and humidity may cause cracking or peeling of emulsion or buckling of the film.

4.3.1.1 Films transferred in sealed containers from one environmental condition to another shall be allowed sufficient time (3 to 4 hours) to attain equilibrium before they are used or stored.

4.3.1.2 Films shall not be used in projectors and other equipment which may tend to get overheated.

4.3.1.3 Films shall not be handled near heaters and radiators.

4.4 Stains, Deposits and Finger-Prints

4.4.1 Stains, deposits and finger-prints are caused by improper washing and drying, rust or corrosion or dirt in the processing equipment or storage cabinets, exposure to fumes, vapours and contact with chemicals, water and other liquids, or fingers, and as a result of bacterial or fungoid growth.

4.4.2 Films shall be handled only by the edges, with clean and dry hands. Use of lintless cotton hand gloves is advisable.

4.4.3 Adhesive tapes or rubber bands, likely to stain the film or impair the image on it, shall not be allowed to come or remain in contact with the film.

4**.4.3.1** If paper bands are used, paper shall meet the requirements specified in IS : 1774-1964*.

4.4.4 Envelopes used for storing microfilm strips and microfiche shall be made of acid-free, stable material having a low hygroscopic tendency. They shall also be free chemicals which affect films, as well as from loose surface fibres which may adhere to the emulsion.

4.4.4.1 The material used shall have a slightly rough or matte surface. A very smooth, glossy surface or a highly plasticized plastic, can result in either sticking or ferrotyping of the image surface, whereas a very rough surface can produce abrasion problems. Glassine envelopes and chlorinated, nitrated, or highly plasticized sheeting shall be avoided.

4.4.4.2 Paper, if used, shall conform to IS : 1774-1964*.

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*Paper for permanent records.

4.4.4.3 The envelopes shall be so designed as to offer minimal resistance during insertion and removal of microfilm strip and microfiche. The envelopes shall be at least 2 mm longer and 2 mm wider than the strip of microfiche.

4.4.4.4 The adhesive, if any, used in making envelopes shall be stable and it shall be so applied as to prevent its seepage on to the surface of the film in the envelopes.

4.4.5 Storage conditions laid down in **8** shall be strictly adhered to for preventing fungoid and bacterial growth.

5. PACKING, DESPATCH AND STORAGE OF MICROFILM ROLL

5.1 Film more than 5 m in length shall be stored wound on spools or bobbins. The winding shall be neither too tight nor too loose.

5.1.1 The film roll shall have a leader and a trailer of at least 0˙5 m each.

5.1.2 The film for despatch shall be wound on spools or bobbins and packed as specified in **5.3.**

5.1.3 The outermost coil of the film, when wound on spools, shall be well within the flanges.

5.1.4 The diameter of the innermost coil of the film shall be not less than 2˙5 cm.

5.2 The spools or bobbins and cans for storage shall be made of stable, non-acidic and non-corrosive material, such as suitable plastics or non-ferrous metals. The use of steel for reels is permissible, provided the reels are well protected by lacquer, enamel, tinning, plating, or some other corrosion resistant finish. Plastics and lacquers which might give off reactive fumes, peroxides or exudations during storage shall not be used.

5.2.1 The core and the flanges of the spool shall be smooth so as not to scratch or damage the film during winding or unwinding.

5.3 Microfilm spools shall be kept in round closed cans to provide protection against dirt and physical damage.

5.3.1 The material and finish of the cans shall conform to **5.2.**

5.4 The cans containing films less than 15 m in length and not wound on spools shall be so stored as to let the film rest on its edges.

6. PACKING, DESPATCH AND STORAGE OF STRIPS, UNITIZED FRAMES, AND MICROFICHE

6.1 Each microfilm strip/microfiche shall be stored separately in envelopes made of paper or plastic foil conforming to **4.4.4** with their emulsion side away from the seam of the envelope.

6.2 For transmitting, envelopes containing films shall be such as to secure the film against physical damage or deformation.

6.3 Envelopes containing film strips and microfiche shall not be stacked, as this could cause the lower ones being stored under high pressure. These shall be stored standing on their long edges.

6.4 Envelopes containing films shall not be stored tightly packed.

7. HOUSING

7.1 Microfilms and microfiche should be stored in closed housings, such as drawers, or on shelves and racks enclosed by doors. Alternatively, open shelves and racks may be used if the film is in closed containers.

7.2 The storage housing material shall be non-combustible and non-corrosive, such as anodized aluminium, stainless steel or steel with baked-on non-plasticized synthetic resin lacquer.

NOTE — Due to their combustible nature, wood, pressboard, hardboard, particle-board and other such materials should be avoided.

7.3 The finish on housing materials shall be durable and shall not cause deleterious effects to the stored film.

NOTE — Adverse effects may be produced by finishes containing chlorinated or highly plasticized resins, or by freshly painted or lacquered surfaces.

7.4 The storage cabinets shall be such as to allow free circulation of air in drawers and compartments.

7.5 Cabinets shall be so placed as to allow the air to freely circulate round each cabinet.

8. AMBIENT CONDITIONS OF STORAGE ROOM/VAULT

8.1 The area for film storage shall be so designed as to provide protection from excessive temperature and from water and other fire fighting agents.

8.2 For medium term storage and use, the ambient temperature should be below 27°C and the relative humidity shall be 50 ± 10 percent.

8.3 For archival storage, temperature between 15 to 20°C and relative humidity 35 ± 5 percent is recommended.

8.3.1 The air, filtered free of dust, smoke and injurious gases (such as sulphur dioxide, hydrogen sulphide, oxides of nitrogen, ozone, acidic fumes and ammonia) shall be circulated under slight positive pressure.

8.4 Films of different generic types should be stored in different areas with independent circulation systems.

8.5 Storage room/vault should be free from internal dampness.

9. INSPECTION

9.1 Inspection of microtransparencies stored, as well as their containers, should be made every two years according to a predetermined sampling plan established in advance.

9.1.1 Different lots shall be inspected each time.

9.2 The inspection of the film shall be carried out for physical damages in the film, such as curl, distortion, brittleness, adhesion failure, degradation of base or emulsion layer, and for visual changes like spots, stains, fading blemishes, etc. Inspection of containers, such as envelopes, spools, bobbins, cans, etc, shall be conducted for any deterioration (embrittlement, discoloration, etc).

9.3 Causes of deterioration noticed shall be analyzed and corrective action taken.

9.3.1 Films showing damage or deterioration shall be duplicated.

9.3.2 Cans and envelopes containing microtransparencies which show signs of corrosion, staining and fungoid growth shall be replaced.

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